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What do anxious patients think? An exploratory investigation of anxious dental patients' thoughts

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Abstract – According to BECK's cognitive model of emotional disorders (1976) anxiety is associated with negative and threatening thoughts concerning the likelihood of personal danger. In the present study the content of thoughts of 32 anxious dental patients was investigated. Patients' mean score for the Dental Anxiety Scale was 17.1 (SD = 2.0). The average time period patients had not visited a dentist was 9.1 yr (SD = 8.7). Using semi-structured interviews 132 thoughts were explored. The mean number of thoughts reported per patient was 4.1 (SD = 1.6). Almost all patients reported thoughts in some way related to their fear. All patients except one reported self-verbalizations of a negative or catastrophizing nature. Nine different categories of the content of the thoughts were identified. Nine percent of the thoughts consisted of visual images. The largest category (23%) consisted of catastrophic thoughts about the patient's own functioning during dental treatment, e.g., thoughts about losing control, panicking and dying. Fifty-nine percent of the patients reported thoughts of this type. The findings provide support for BECK's cognitive model of emotional disorders.

Key words: behavioral dentistry; cognitions; dental anxiety; psychology

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Most psychological contributions to the understanding of anxiety emphasize the importance of faulty learning experiences for the acquisition and maintenance of anxiety (1). More recently, cognitive perspectives have emerged which may account for the etiology and persistence of anxiety. According to BECK's cognitive model of emotional disorders anxiety is associated with negative and irrational thoughts about future events (2, 3). Specifically, it is argued that irrational anxiety is the direct emotional consequence of unrealistically threatening thoughts concerning the likelihood of personal danger (4). A number of studies have demonstrated that patients with anxiety disorders, such as simple phobia, social phobia, agoraphobia, and generalized anxiety disorder, are indeed characterized by excessively threatening thought content (5–9).

A relationship between cognitions and level of anxiety also has been found in studies on dental anxiety. WARDLE (10, 11) reported evidence supporting the view that expectations of pain make a significant contribution to dental anxiety. Furthermore, in a study among students KENT & GIBBONS (12) found that persons with high dental anxiety generally were more likely to report unrealistic heightened expectations of harm than those with low or moderate levels of dental anxiety. Additional support for a relationship between cognitions and dental anxiety was provided by a study in which interviews were used to examine what children said to themselves during dental treatment (13). It was found that a large number of the children (42.5%) reported negative thoughts about dental treatment (e.g., "At any moment it will start to hurt"). Most of the reported negative self-talk appeared to occur in highly anxious children.

If we are to understand the cognitive processes that mediate dental anxiety, it is important to examine patients' cognitions more closely. Although there is empirical evidence that patients with high anxiety are inclined to engage in negative thinking, up until now almost no attempt has been made to directly explore the content of anxious adult patients' thoughts when they are in the dental situation. The aim of the present exploratory study, therefore, was to determine what type of thoughts are involved.

Materials and methods

A total of 32 patients (11 men and 21 women) participated in this study. All were attending a dentist specializing in treatment of dentally anxious patients for

the first time. About half of the patients made the appointment themselves, the other half had been referred by dentists, doctors or social workers because of problems related to treatment or problems due to prolonged avoidance of dental care. Mean age of the patients was 35 yr (SD = 6.6). Average time period patients had not visited a dentist was 9.1 yr (SD = 8.7). Information about patients' thoughts was collected during semi-structured interviews while they were in the dental operatory. With the intention to stimulate anxiety related thinking the interviews were carried out by the dentist himself prior to treatment. Before the interview took place the Dental Anxiety Scale (DAS) was used to measure dental anxiety (14). The DAS is a four-item measure that has been widely used in studies of dental anxiety. Items are scored on a scale of 1 to 5 and summed to give an overall anxiety score of 4 (none) to 20 (extreme).

A variety of methods exist for assessing cognitions (15), and in the present study a decision was made to use semi-structured interviews. These interviews consisted of some open-ended questions regarding patients' thoughts about dental treatment. The procedure was almost similar to that used in a study by BUTLER *et al.* (8) among patients with generalized anxiety disorder. First, patients were asked "When you think of going to the dentist, what thoughts go through your mind?". In order to explore patients' thoughts further questions were asked: e.g., "Are there particular thoughts that occur to you when you are anxious?"; "What do you think might happen during treatments?". If patients failed to identify thoughts in response to the questions, patients were asked to think of a dental visit in the past which made them anxious, to imagine this situation clearly and to report what went through their minds. The subjects were asked to report any thought or image they experienced while imagining the dental situation. For the interviews a maximum of 15 min was available.

In order to allow scoring of patients' responses each verbalized thought was treated as an unit of analysis. All responses were written down verbatim and examined in order to create different categories according to the subject matter of the thought. Because of the specific character of the mental images among the merely verbal cognitions, for this type of thought one extra category was created. Next, all thoughts were categorized. To assess reliability of scoring procedures, this was done by two independent judges.

Results

Patients' mean score for the Dental Anxiety Scale was 17.1 (SD = 2.0). All patients had a DAS-score of 13 or more, which is considered to be indicative of dental anxiety (16). A *t*-test indicated no significant sex differences in anxiety scores [$t(30) = -3.66$, $P = 0.72$, two-tailed]. Altogether, in answer to the questions during the interviews, 132 thoughts were assessed. The mean number of thoughts reported per patient was 4.1 (SD = 1.6). Only one patient could not identify at least one thought. In all cases the thought content was in some way related to anxiety. Positive self-talk or verbalizations irrelevant to the dental situation were not reported. With regard to the content of the thoughts eight different categories were identified. Overall agreement between the two judges was 82%. After discussion some of the remaining thoughts could be classified. An additional category was used for thoughts about no agreement could be reached.

For all categories *t*-test showed no significant differences between women and men with regard to number of thoughts reported, suggesting no differences in self-disclosure by gender. The categories with the matching percentages and the number of patients that reported each thought are displayed in Table 1. A majority of the patents (59%) reported thoughts related to the patients' own functioning, like thoughts about losing control (e.g., "I have no control over what happens"), about panicking (e.g., "I can't get away from here, I'm locked in") and thoughts about choking (e.g., "I think I'm going to choke"). There was one thought about death (e.g., "I'm afraid I'm going to die"). This category accounted for 23% of the total number of reported thoughts. Other thoughts referred to patients' personality (e.g., "I'm just a neurotic"), catastrophic ideas about treatment (e.g., "I hope he doesn't lose control of the drill") and ideas about their teeth (e.g., "My teeth are rotten anyway"). Only a small proportion of the subjects (9%) reported visual images. These mental images were about being treated (e.g., images of instruments), about their teeth (e.g., images of teeth falling out) or about previous dental experiences (e.g., "I see a picture of a long corridor with a man in a white coat at the end of it").

Discussion

In this study, semi-structured interviews were used to provide knowledge about the type of thoughts patients have while they are to undergo dental treatment. Although this study is exploratory and caution is needed in interpreting the results, the findings similar to those obtained by other investigators in studies on anxiety disorders (4, 7, 8), indicate that dental anxious patients are likely to engage in negative or catastrophizing thinking. It appeared to be relatively easy to explore dentally anxious patients' thoughts. Overall, the patients reported their cognitions readily, without being extensively questioned. Almost all pa-

Table 1. Types of thoughts related to dental treatment of 31 anxious patients

	% of thoughts reported	% of patients
1. Thoughts about one's own functioning (e.g., losing control, panicking, fainting)	23	59
2. Thoughts about one's own teeth	16	47
3. Thoughts about treatment, e.g., pain	14	44
4. Thoughts about one's own personality (troublesome, tense, anxious)	11	41
5. Thoughts about anxiety itself	7	26
6. Thoughts about embarrassment	5	23
7. Thoughts about the dentist	5	23
8. Mental images	10	26
9. Miscellaneous	8	29
	100%	

tients reported fear-related thoughts, which is in line with other studies on self-verbalizations with anxious people (7, 8).

According to BECK's cognitive model of emotional disorders the cognitive content of anxious people reflect the themes of danger or harm to the individual (2). The present data offer support for this theory, and it is interesting to note that most of the reported thoughts appeared to correspond in nature with those identified by other investigators among patients with generalized anxiety disorder (8). Remarkably, the proportion of patients reporting thoughts related to collapsing, dying or the inability to cope, was the same as found here (59%). These results suggest that the perception of losing control is an important factor, which is involved in divergent forms of anxiety. Various authors have stressed the importance of perceived control with respect to dental pain and anxiety and it seems that perceived control decreases the intensity of pain, aversiveness and discomfort by decreasing uncertainty (17).

The finding that no positive thoughts were reported probably has to do with the composition of the sample. For example, PRINS (13) found that positive thoughts about dental treatment only occurred in children with low anxiety. Anxiety and negative self-verbalizations apparently go together. However, there is one interesting difference with PRINS's study among children. PRINS revealed that highly anxious children are inclined to report self-verbalizations preoccupied with pain and thoughts related to escape or avoidance. A lack of thoughts of the latter category in the present study leads us to suspect that adult dental patients, while they are in the dental situation, think less often of escaping than do children. Clearly, this does not mean that adults have no thoughts of avoiding, since these thoughts may have occurred before they were actually in the dental situation. As far as mental images are concerned, the finding that relatively few images were reported could mean that internal dialogue plays a more substantial role in the thoughts of anxious dental patients than images do. Another explanation could be that images are harder to verbalize than internal dialogue.

With regard to the method of data collection some remarks should be made. It could be argued that, besides the problem of reliability of self-report data, the context of the interview and the way in which questions are formulated may influence patients' thoughts. For example, since the dentist did the interviewing, generalizability of the findings may have been reduced by the fact that reporting of certain thoughts is suppressed. This may have been the case with regard to thoughts of embarrassment in the situation and thoughts specific to dentist personality characteristics. Another way in which this study can be criticized is in its sample size. Generalizability of these results require larger sample sizes in order to make reliable comparisons with other cognitive psychological studies about other anxiety disorders or other dental fear groups.

On the other hand and in spite of these shortcomings, assessing the thoughts of dentally anxious patients should be considered an interesting starting point for both research and treatment. Although more research is necessary to address this topic fully, it is apparent that a careful assessment of thoughts of dentally anxious patients can provide us with a better understanding of the role of cognitive factors in maintaining dental anxiety once it has been established. Future research should focus on the question whether it is the presence of certain types of negative thoughts which best distinguishes between low and high anxious dental patients. A study in which the cognitions of both groups are compared could be enlightening. Moreover, assessing patients' thoughts could be the first step in the development of cognitive treatment strategies for dental anxiety. Therefore, it should be examined whether it would be useful to make a distinction between anxious patients with a predominance of threat-related thoughts and those indicating not having such cognitions. Knowledge thus achieved might be important for developing and optimizing treatment techniques for different groups of patients. That is, for patients with catastrophic thoughts about dental treatment, cognitive strategies which attempt to treat anxiety by helping patients to identify, evaluate and modify their unrealistic appraisals of danger, might be especially helpful.

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